REMARKS

RELATIONSHIP TO PARENT APPLICATION SERIAL NO. 09/751,666:

This application is a Continuation-in-Part Application of U.S. Patent Application Serial No. 09/751,666 (the "parent application"). The claims of these two applications as filed are substantially identical. During the prosecution of the parent application, the Examiner required restriction between five groups of claims, and Applicants elected Group (I), directed to a separation method. As a result, the claims directed to the nonelected subject matter were withdrawn, and the right to file a divisional application under 35 U.S.C. §121 was preserved directed to the nonelected subject matter.

THE AMENDMENTS AND NEW CLAIMS:

Applicants also introduced a number of the amendments for clarification in the parent application. In addition, a number of new claims were introduced in the parent application. These claims find support in the various claims as originally submitted. Since the claims of the present application as filed are substantially identical to the claims of the parent application as filed, the Examiner has agreed, in a telephonic interview on June 11, 2002, to expedite examination of this application in place of the parent application

Thus, the claims of the subject application have been amended to correspond to the claims of the parent application. As the subject application incorporates the parent application by reference (see page 1, lines 7-9), no new matter has been introduced by way of this amendment. Furthermore, withdrawal of claims 16-66 is without prejudice, and Applicants expressly preserve the right to file a divisional application under 35 U.S.C. §121 directed to the nonelected subject matter in the parent application.

In the Office Action mailed from the USPTO on March 18, 2002, the Examiner states that certain claims of the parent application read broadly on actions such as "blowing a bubble out of a bath tub to find a foreign object, such as a small insect, in a bowl of soup or glass of water and flicking it way with ones finger or flowing it away with ones breath." Applicants disagree because such actions do not involve the use of ***focused energy***. In order to clarify the inventive subject matter, Applicants have nevertheless replaced the term "energy" in the pending

claims with the term "radiation." This is supported throughout the application as filed because the term "energy" is generally used to describe radiation rather than mechanical actions such as using fingers to flick away a fly out of soup or blowing bubbles in a bathtub. For example, the term "acoustic focusing means," as disclosed on page 14, lines 3-9, "refers to a means for causing acoustic waves to converge at a focal point … [and] may be as simple as a solid member having a curved surface, or it may include complex structures, such as those found in Fresnel lenses, which employ diffraction in order to direct acoustic radiation." Accordingly, it should be clear that the claims do not read on "using fingers to flick a fly out of a bowl of soup or blowing bubbles in a bathtub." Use of focused radiation involves the ***convergence of a <u>wave</u>***, and the flicking or bubble-blowing actions to which the Examiner refers do not involve wave convergence.

Should the Examiner have any questions concerning this communication, he is welcome to telephone the undersigned attorney at (650) 330-0900.

Respectfully submitted,

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APPENDIX A
REDACTIONS INDICATING AMENDMENTS MADE
(UNDERLINING INDICATES ADDITIONS, ~~STRIKETHROUGH~~ INDICATES DELETIONS)

1. (Amended) A separation method comprising the steps of:

(a) detecting, in a fluid having a surface~~,~~ and containing a plurality of localized volumes having a different acoustic impedance than the fluid, a single localized volume located sufficiently near the surface for ejection;

(b) determining whether the single localized volume possesses one or more properties;

(c) selecting the single localized volume for ejection from the fluid based on the determination of one or more properties in step (b); and

(d) ejecting the single localized volume from the fluid by use of focused ~~energy~~radiation.

2. (Amended) The method of claim 1, wherein the focused ~~energy~~radiation is focused acoustic ~~energy~~radiation.

3. (Amended) The method of claim 1, wherein the focused ~~energy~~radiation is focused electromagnetic ~~energy~~radiation.

8. (Amended) The method of claim 1, wherein the localized volume is ejected with a first non-zero velocity component perpendicular to the fluid surface and a second non-zero velocity component parallel to the fluid surface to effect a nonvertical trajectory whereby the localized volume experiences a net displacement in a direction parallel to the fluid surface.

9. (Amended) The method of claim 8, wherein the nonvertical trajectory is directionally controllable~~, so that the direction of net displacement parallel to the fluid surface is also directionally controllable~~.

12. (Amended) The method of claim ~~11~~1, wherein the determining in step (b) of the one or more properties is a quantitative or semiquantitative determination~~ and the selecting of step~~

~~(c) is between non-ejection and multiple ejection trajectories and depends upon the quantitative or semiquantitative determination~~.

13. (Amended) The method of claim 12, wherein the fluid is contained in a fluidic channel on a substrate surface.

14. (Amended) The method of claim 13 wherein data from ~~said detecting of (a) and said determining of~~steps (a) and (b) is input into a processor~~, whereby the processor~~ that directs said selecting of (c) and said ejecting of (d) by reference to the ~~measured~~ data~~, programmed selection criteria, and system parameters~~.

15. (Amended) The method of claim 1 wherein the localized volumes are circumscribed volumes ~~comprising living cells~~.

67. (New) The method of claim 13, wherein the fluidic channel has a cross section permitting the localized volume to flow freely through the channel.

68. (New) The method of claim 67, wherein the cross section is sufficiently narrow such that if two or more of the localized volumes are present in the channel, they necessarily form a linear flow path of single localized volumes successively passing any given point in the channel.

69. (New) The method of claim 1, wherein the fluid is contained in two or more fluidic channels on a substrate surface.

70. (New) The method of claim 1, wherein steps (a) through (d) are repeated so as to eject a plurality of single localized volumes from the fluid.

71. (New) The method of claim 15, wherein each circumscribed volume comprises a cell.

72. (New) The method of claim 71, wherein each cell is a living cell.

73. (New) The method of claim 72, wherein steps (a) through (d) are repeated so as to selectively eject a plurality of living cells from the fluid.

74. (New) The method of claim 72, wherein the fluid is contained in a fluidic channel on a substrate surface.

75. (New) The method of claim 74, wherein the fluidic channel has a cross section permitting each cell to flow freely through the channel.

76. (New) The method of claim 75, wherein the cross section is sufficiently narrow such that if two or more cells are present in the channel, they necessarily form a linear flow path of single cells successively passing any given point in the channel.

77. (New) The method of claim 67, wherein the fluid is contained in two or more fluidic channels on a substrate surface.

78. (New) The method of claim 73, wherein each cell is ejected toward and deposited on a different target site on a substrate surface.

79. (New) The method of claim 78, wherein the target site at which each cell is deposited is selected based on the determination in step (b).

80. (New) The method of claim 73, wherein each cell is ejected toward and deposited into a target container.

81. (New) The method of claim 80, wherein cells having a first property as determined in step (b) are deposited into a first target container, and cells having a second property as determined in step (b) are deposited into a second target container.

82. (New) The method of claim 81, wherein additional cells having a particular property as determined in step (b) are deposited into an additional target container.

83. (New) The method of claim 80, wherein the target container is a well in a well plate.

84. (New) The method of claim 82, wherein the target containers are individual wells in a single well plate.

85. (New) The method of claim 80, wherein the target container is a fluidic channel in a substrate surface.

86. (New) The method of claim 82, wherein the target containers are individual fluidic channels in a substrate surface.

87. (New) The method of claim 2, wherein the acoustic energy is delivered to the localized volume at a geometric center of the volume.

88. (New) The method of claim 87, wherein the geometric center of the volume is located approximately 50 to 150 μm beneath the fluid surface.

APPENDIX B
PENDING CLAIMS UPON ENTRY OF THIS AMENDMENT

1. A separation method comprising the steps of:

(a) detecting, in a fluid having a surface and containing a plurality of localized volumes having a different acoustic impedance than the fluid, a single localized volume located sufficiently near the surface for ejection;

(b) determining whether the single localized volume possesses one or more properties;

(c) selecting the single localized volume for ejection from the fluid based on the determination of one or more properties in step (b); and

(d) ejecting the single localized volume from the fluid by use of focused radiation.

2. The method of claim 1, wherein the focused radiation is focused acoustic radiation.

3. The method of claim 1, wherein the focused radiation is focused electromagnetic radiation.

4. The method of claim 1, wherein the localized volume comprises a solid or gel particle.

5. The method of claim 1, wherein the localized volume comprises a cell.

6. The method of claim 5, wherein the localized volume comprises a living cell.

7. The method of claim 1, wherein the localized volume is ejected in a trajectory substantially perpendicular to the fluid surface.

8. The method of claim 1, wherein the localized volume is ejected with a first non-zero velocity component perpendicular to the fluid surface and a second non-zero velocity component parallel to the fluid surface to effect a nonvertical trajectory whereby the localized volume experiences a net displacement in a direction parallel to the fluid surface.

9. The method of claim 8, wherein the nonvertical trajectory is directionally controllable.

10. The method of claim 8, wherein the non-vertical distance of travel parallel to the fluid surface is controllable by varying the focused energy.

11. The method of claim 8, wherein the vertical distance of travel parallel to the fluid surface is controllable by varying the focused energy.

12. The method of claim 1, wherein the determining in step (b) of the one or more properties is a quantitative or semiquantitative determination.

13. The method of claim 12, wherein the fluid is contained in a fluidic channel on a substrate surface.

14. The method of claim 13 wherein data from steps (a) and (b) is input into a processor that directs said selecting of (c) and said ejecting of (d) by reference to the data.

15. The method of claim 1 wherein the localized volumes are circumscribed volumes.

67. The method of claim 13, wherein the fluidic channel has a cross section permitting the localized volume to flow freely through the channel.

68. The method of claim 67, wherein the cross section is sufficiently narrow such that if two or more of the localized volumes are present in the channel, they necessarily form a linear flow path of single localized volumes successively passing any given point in the channel.

69. The method of claim 1, wherein the fluid is contained in two or more fluidic channels on a substrate surface.

70. The method of claim 1, wherein steps (a) through (d) are repeated so as to eject a plurality of single localized volumes from the fluid.

71. The method of claim 15, wherein each circumscribed volume comprises a cell.

72. The method of claim 71, wherein each cell is a living cell.

73. The method of claim 72, wherein steps (a) through (d) are repeated so as to selectively eject a plurality of living cells from the fluid.

74. The method of claim 72, wherein the fluid is contained in a fluidic channel on a substrate surface.

75. The method of claim 74, wherein the fluidic channel has a cross section permitting each cell to flow freely through the channel.

76. The method of claim 75, wherein the cross section is sufficiently narrow such that if two or more cells are present in the channel, they necessarily form a linear flow path of single single cells successively passing any given point in the channel.

77. The method of claim 67, wherein the fluid is contained in two or more fluidic channels on a substrate surface.

78. The method of claim 73, wherein each cell is ejected toward and deposited on a different target site on a substrate surface.

79. The method of claim 78, wherein the target site at which each cell is deposited is selected based on the determination in step (b).

80. The method of claim 73, wherein each cell is ejected toward and deposited into a target container.

81. The method of claim 80, wherein cells having a first property as determined in step (b) are deposited into a first target container, and cells having a second property as determined in step (b) are deposited into a second target container.

82. The method of claim 81, wherein additional cells having a particular property as determined in step (b) are deposited into an additional target container.

83. The method of claim 80, wherein the target container is a well in a well plate.

84. The method of claim 82, wherein the target containers are individual wells in a single well plate.

85. The method of claim 80, wherein the target container is a fluidic channel in a substrate surface.

86. The method of claim 82, wherein the target containers are individual fluidic channels in a substrate surface.

87. The method of claim 2, wherein the acoustic radiation is delivered to the localized volume at a geometric center of the volume.

88. The method of claim 87, wherein the geometric center of the volume is located approximately 50 to 150 μm beneath the fluid surface.